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A Summary of Current Programs, 10/1/66  
and Preliminary Report of Progress  
for 10/1/65 to 9/30/66

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ECONOMIC AND STATISTICAL ANALYSIS DIVISION  
of the  
ECONOMIC RESEARCH SERVICE  
UNITED STATES DEPARTMENT OF AGRICULTURE  
and related work of the  
STATE AGRICULTURAL EXPERIMENT STATIONS

This progress report is primarily a tool for use of scientists and administrators in program coordination, development and evaluation; and for use of advisory committees in program review and development of recommendations for future research programs.

The summaries of progress on USDA and cooperative research include some tentative results that have not been tested sufficiently to justify general release. Such findings, when adequately confirmed, will be released promptly through established channels. Because of this, the report is not intended for publication and should not be referred to in literature citations. Copies are distributed only to members of Department staff, advisory committee members, and others having a special interest in the development of public agricultural research programs.

This report also includes a list of publications reporting results of USDA and cooperative research issued between October 1, 1965, and September 30, 1966. Current economic and statistical research findings are also published in the Outlook and Situation Reports, Agricultural Economics Research, and The Farm Index. This progress report was compiled in the Economic and Statistical Analysis Division, Economic Research Service, U.S. Department of Agriculture, Washington, D.C.

UNITED STATES DEPARTMENT OF AGRICULTURE  
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## INTRODUCTION

The Economic and Statistical Analysis Division has the responsibility for research directed toward (1) the identification and measurement of relationships among the factors affecting the demand, supply, and price of agricultural commodities; (2) identification and measurement of broad relationships between the farm economy and the national economy; (3) measurement and analysis of farm income and income of farm population; (4) measurement and analysis of demand for and consumption of food and other farm products, and long-run projections of economic growth and demand and prices; and (5) historical research relating to major developments in farming and major changes in policies, programs, and organizations of the Department.

Development and improvement of statistical data and development, adaptation, and application of new and improved methods and techniques of statistical analysis are integral parts of this process.

This research provides the information that underlies the appraisals of the current and prospective economic situation for agriculture and for agricultural commodities which are the heart of the outlook work. It also provides the information required for analyses of the probable effects of alternative programs and the measurement of the effects of actual programs.

Economic and statistical analysis research is reported for the period October 1, 1965, through September 30, 1966. The research effort in the Economic and Statistical Analysis Division amounts to approximately 53 professional man-years.

Following are some of the recent research accomplishments of the Economic and Statistical Analysis Division.

As a result of strong domestic and export demands, supplies of wheat, rice, feed grains, and soybeans were drawn upon heavily. Stocks of wheat and feed grains were sharply reduced. Special analyses were made of program possibilities for expansion of these crops while holding governmental costs to a minimum. Milk production declined in 1965 and again in 1966. Here also analysis was made of alternative programs for assuring adequate supplies of dairy products. Under the 1966 cotton program price support loans are dropped below world price levels and payments are made to farmers to maintain their incomes. The effect of lower world prices on acreage, production, and exports of cotton, and on farm income in Latin American countries was evaluated. In addition to the regular situation reports, statistical bulletins and supplements were published for cotton; livestock and meat, poultry and eggs, fats and oils, and wool.



A study of the parity income position of commercial family farmers was undertaken in response to a directive from Congress. The basic concept of the study is parity returns to the resources used in farm production. It is proposed to measure parity returns by examining opportunity cost or alternative earnings capacity of these resources. Opportunity-cost wage rates are estimated for farm operators by economic class of farm and for hired and unpaid family labor. A number of different interest rates and methods of measuring alternative returns to capital have been devised. Some of the promising ones are landlord rental returns, common stock returns, farm mortgage interest rates and returns to a portfolio of securities. These parity return standards will be applied to data for 1959 and 1964-1966 as soon as more complete data from the 1964 Census of Agriculture become available. A report of the findings and recommendations of the study will be sent to Congress by the Secretary.

Projections to 1980 for agricultural commodities were published during the year. These projections represent the culmination of much detailed painstaking analysis, and the assistance, cooperation and review of a number of other Divisions in the Economic Research Service. They include estimates of production, imports, domestic use, exports, and prices for major agricultural commodities.

The projections, together with new procedures for estimating supply response for major crops, were used as a basis for appraising the potential of U. S. agriculture to meet the food-aid needs of non-communist developing countries of the world over the next 15 years. The general conclusions of the study were that: (1) The U.S. could provide food-aid to close the production-requirements gap of these countries through 1975, (2) more food-aid would be available if receiving countries would take larger shipments of corn, barley, and grain sorghums in place of wheat and rice, and (3) food-aid programs of such a magnitude would be more costly than present crop diversion programs.

Basic research on the relationships between farm, wholesale and retail prices was undertaken to explain relative changes in these price series over time. The investigation also appraised the adequacy of these indexes as measures of changing price levels.

A comprehensive history of production adjustment, price support, and disposal programs for wheat was undertaken and virtually completed. Work on the history of U.S. technical assistance programs in agriculture and on a history of personnel management was continued. USDA personnel programs have significantly influenced other government agencies.

As a step toward carrying out the recommendations for a National Program of Research for Agriculture, made jointly by the Association of State Universities and Land Grant Colleges and the USDA, a section has been added to each Area in this report. It includes a list of related publications of the State Agricultural Experiment Stations where applicable. In future years,



it is expected that information will be available to permit reporting achievements resulting from State research similar to the present reporting of the USDA and cooperative research.



## AREA NO. 1. COMMODITY SITUATION AND OUTLOOK ANALYSIS

### PROBLEM

Frequent accurate appraisals of the economic prospects for important agricultural commodities are necessary if farmers are to plan and carryout their production and marketing activities in an efficient and profitable way. The typical farmer cannot afford to collect and analyze all the statistical and economic information necessary for making sound production and marketing decisions. Such information is provided through a flow of current outlook information; the development of longer range projections of the economic prospects for the principal agricultural commodities; and analyses of the economic implications of existing and proposed programs affecting major farm commodities.

### USDA AND COOPERATIVE PROGRAM

The program includes a continuous appraisal of the current and prospective economic situation of the major crop and livestock items. These appraisals, together with developments of interest to the industry and results of special studies, are published 4 to 6 times a year in the various commodity Situation reports. Brief resumes are carried in the quarterly Demand and Price Situation and when appropriate in monthly issues of the Farm Index and the Agricultural Outlook Digest. Pertinent information is also presented at the Annual Outlook Conference, at regional and State conferences, and at meetings with industry groups. Statistical handbooks are published periodically for livestock and a number of the field crops.

Except for a regional field office for livestock, in Denver, Colorado, which is a cooperative effort with the Federal Extension Service and State Extension Services in the Western States, all the USDA commodity situation and outlook work is carried on in Washington. The total USDA commodity situation and outlook program currently involves 19 scientific man-years. This is distributed among commodity groups as follows: food grains 1.0; feed 1.5; livestock and meat 4.5 1/; dairy 2.0; poultry and eggs 1.0; fats and oils 1.5; fruits and tree nuts 1.0; vegetables and potatoes 2.0; cotton and man-made fibers 1.5; wool 1.5; tobacco 1.5.

### PROGRAM OF STATE EXPERIMENT STATIONS

For the most part the States depend heavily on the USDA for across-the-board commodity situation and outlook research. However, the State extension staff members supplement and adapt such research information to meet the commodity situation of their States. The total direct research effort at State Experiment Stations in the situation and outlook area is small--probably no more than 2 to 3 scientific man-years. While not designed as outlook research, much of the research conducted by the experiment stations and reported under

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1/ 2.5 man-years in Washington and 2 man-years in Denver, Colorado.

Area No. 2 contributes to improved understanding of price-making forces, which in turn improves market situation analysis and price forecasting.

## PROGRESS--USDA AND COOPERATIVE PROGRAMS

### A. Food Grains

During the past year considerable resources were employed in the analysis of alternative wheat and rice programs. With the emergency of food shortages in India, emphasis was placed on alternative food aid programs, including the substitution of other grains for wheat. The decline in wheat stocks, both in the U.S. and around the world, called for additional attention to world wheat prices, U.S. export pricing policy, and provisions of the 1967 Wheat Program. Considerable material was furnished the National Food Marketing Commission at their request.

The situation reports reflected expanded work on the feeding of wheat to livestock; the supply and demand situation in major wheat producing nations competing with the U.S. in world trade; increased trade by other wheat exporting countries with the communist nations and the effect on the U.S. situation; and the rye situation in the U.S. Formerly, rye was covered only intermittently in the Wheat Situation but in the last year it has been discussed in each issue.

### B. Feed

The Feed Grain Program continued to be given special attention in 1965-66. Much of the analysis has been done to aid in establishing a desirable production-utilization balance through use of a voluntary type acreage diversion program. Feed grain stocks have been materially reduced since the beginning of the program in 1961 when a record 85 million tons was on hand. Feed grain requirements have exceeded production in 4 out of the last 5 years, reducing the carryover in 1966 to about 47 million tons. With prospects for another decrease in carryover in the 1966-67 season, alternative programs are under study. Annual average prices received for feed grains have risen about 16 percent from the low of 1960-61. In the past 3 years, prices have been above the loan rates, resulting in much less grain going into the program and a marked reduction of Government stocks through CCC sales.

### C. Livestock and Meat

Several topics in the livestock area received special attention during the past year. Major consideration was given to the downturn in the cattle cycle and how the current cycle has differed from earlier cycles. A special article in the March issue of the Livestock and Meat Situation centered on structural changes in the industry as well as on outside forces which altered the current downturn from earlier ones. The August situation stressed the inventory decline in cattle and the probable effect this will have on future beef production. An analysis of the relationship between prices of feeder pigs and feed costs and expected hog prices was published in the March issue. The



analysis showed that the breakeven price in buying feeder pigs varies considerably depending on the cost of feed and the market price for slaughter hogs at the end of the feeding period.

#### D. Dairy

During the past year attention has been given to the shifting supply-demand balance for milk and dairy products, which has resulted in the disappearance of government stocks and in stronger market prices; and to the evaluation of alternative programs for assuring adequate supplies of dairy products. The world dairy situation and U.S. imports of dairy products were followed closely because of changing U.S. import-export conditions following the 1965 and 1966 declines in milk production.

In response to industry interest for improved consumption data that recognized the increased use of low-fat products, new series were developed to provide information on total and per capita sales of dairy products by product weight and in terms of milk solids, as well as milk equivalents. Because of declining farm use and changing levels of CCC donations, sales and consumption data show considerably different trends. Per capita sales have been fairly stable in the last 5 years while per capita consumption has declined. Problems of dairy labor scarcity and increasing wage rates led to an analysis of trends and prospects for dairy labor. Special studies were made of the butter situation, prices and margins for dairy products, and veal production.

#### E. Poultry and Eggs

Much effort was devoted to analyzing the impact of the vigorous growth in demand for high-protein foods on poultry and egg production and prices. This upsurge in demand was generated by the rapidly expanding economy. As early as November 1965, a large expansion in broiler and turkey production but little change in egg production was forecast for calendar year 1966. Early in 1966, analyses indicated that production expansion in poultry would accelerate during the year and that a large buildup in laying flocks was getting underway. Demand was increasing rapidly and prospects were for another sizeable gain in farm income from poultry and eggs in 1966. However, by September it was becoming evident that broiler and egg production might accelerate further in 1967 and that feed prices in early 1967 probably would be above a year earlier. Producers were warned that if current trends continued, output would be so large during the first half of 1967 that returns might be sharply reduced.

Several other topics also received attention. The November 1965 issue of the Poultry and Egg Situation presented preliminary findings of a study of factors influencing turkey prices during and before the heavy marketing period. The April issue featured a comprehensive article on futures trading in fresh eggs. Trading in these contracts had been initiated by the Chicago Mercantile Exchange in February. A statistical bulletin was published in May as a supplement to the Poultry and Egg Situation.

## F. Fats and Oils

During the past year emphasis was again focused on soybeans because of their growing importance in both the domestic and world markets. Soybeans ranked third among U.S. cash crops in 1965 and likely will improve its position in 1966. Record dollar exports of soybeans and soybean meal enabled the oil-seeds and their products group to rank second only to feed grains as top dollar earner among U.S. agricultural exports in the fiscal year ending June 30, 1966.

The November 1965 Fats and Oils Situation included a special article analyzing the growth in the U.S. soybean processing industry. Processing capacity has about doubled during the past 15 years, increasing from 310 million bushels in 1951 to about 600 million in 1965. Processing mills have become larger, fewer in number, and more integrated with the mixed-feed business. The January 1966 issue featured an analysis of post-war trends in corn oil production and consumption. The steady growth in wet-process grindings of corn for starch has resulted in increased output of by-product corn oil, which has doubled in the past 15 years. Domestic use of corn oil continues mainly as a salad and cooking oil, but margarine manufacture now accounts for over one-third the total. A special article in the March 1966 issue analyzed the factors contributing to the sharp reduction (about a fourth) in the output of butter and lard during 1965-66. Problems facing the cottonseed industry as it adjusts to the small 1966 crop, down about 27 percent from 1965, were analyzed in the August issue. The sharp cutback reflects the heavy acreage diversion under the 1966 Upland Cotton Program. The 4 year cotton program (1966-69 crops) calling for less production will accentuate the downtrend in the number of cottonseed oil mills and probably will result in more integration of remaining mills with feed, fertilizer, or other enterprises.

A statistical compendium tracing changes since 1909 for oilseeds, fats and oils, and their products was released in August. This handbook, which replaces a similar one issued a decade ago, was expanded to include information on foreign trade in fats and oils, price support operations, and minor oilseed crops.

## G. Fruits and Tree Nuts

An article in the January 1966 issue of the Fruit Situation examined the nature, extent and economic importance of controlled atmosphere storage of apples. CA storage of apples has increased rapidly over the past 5 to 10 years. In recent years, about a fifth of all apples in cold storage were held under controlled atmosphere conditions and further gains are in prospect. The CA method of storage allows growers and other marketers to extend the marketing period for their fruit, permits more orderly marketing during the season and increases opportunities for maximizing returns. Consumers also benefit through the availability of increased quantities of high quality apples late in the season.



In conjunction with the regular analytic and outlook work, continuing emphasis was given to special presentations in the Fruit Situation of material covering processed citrus and noncitrus fruits, geographic distribution of fruit and tree nut production, and per capita consumption. Special tables and charts were prepared to show trends in the production of citrus and edible tree nuts since 1935 in relation to population growth. Revisions were incorporated in per capita fruit consumption data, and a new series was added showing in more detail the consumption of the frozen juice category.

#### H. Vegetables and Potatoes

Potato production and utilization trends over the past decade were reviewed in a special article published in the Vegetable Situation in October 1965. The increasing importance of processing outlets which now account for over a third of total potato sales was emphasized. Associated developments in per capita consumption of potatoes were discussed. A considerable amount of special material for selected fruits and vegetables was prepared for the Committee for Agriculture of the Organization for Economic Cooperation and Development. The information analyzed historical trends in the production, utilization, domestic consumption, and foreign trade, and indicated possible long-term developments in production and trade for these items.

Special appraisals were made, for the Secretary's office and for working groups within the Department, of the apparent effect of the labor situation on production and prices for various fruits and vegetables. Close attention was given throughout the year to the price situation for commercial fresh vegetables. An analysis showed that although prices continued to vary greatly in the short run, there has been a general uptrend since about mid-1963 in prices of nearly all fresh vegetables. Particularly sharp increases occurred for tomatoes and lettuce. The strong price situation appears to be associated to some extent with a decline in per capita output for fresh sale.

#### I. Cotton and Other Fibers

Prior to the enactment of new cotton legislation last year, attention was devoted to analysis of alternative cotton programs. Since November 1965, after a new program became effective for the 1966-69 crops of upland cotton, emphasis was placed on the analysis of the probable effect of the new program on cotton production, farm income, prices, domestic use, and exports of cotton. The new program differs from past programs in several respects. Price support loans to cotton producers are dropped to below world price levels in an effort to stimulate the movement of cotton into domestic and export markets. The level of price support to producers for the 1967 through 1969 crops may not exceed 90 percent of the estimated average world price. Producer income is supplemented both by direct price support payments and by acreage diversion payments. Analyses were prepared on the probable effects of lower world prices on acreage, production, and exports of cotton from Mexico and other Latin American countries; and of the impact of various price levels on the foreign exchange earnings of these countries.



A study containing estimates of civilian and military demand for cotton textiles during fiscal 1966-67 was prepared for the Council of Economic Advisers. Both domestic and foreign sources of textile supplies were analyzed. An article in the September 1966 issue of the Cotton Situation contained estimates of the raw fiber content of textile fabrics used by the military forces. Separate estimates, beginning with 1961, were made for cotton, man-made fibers, and wool. These data are now being programmed for an electronic computer and in the future they will be available on a monthly basis. The cotton linters situation has received special attention due to increasing domestic and export demand for linters pulp, prospects for a reduced supply in line with the small cotton crop, and a sharp rise in prices. To help alleviate the prospective tight supply-demand situation, imports were analyzed as a source of larger supplies, and substitutes for cotton linters and other factors were considered. Considerable time and effort were devoted to preparation of economic materials for use of the National Advisory Commission on Food and Fiber.

#### J. Wool and Mohair

U.S. military purchases of wool fabrics were reviewed in 1966. The probable effect of the military situation in Vietnam on future domestic wool prices was analyzed. Special materials were prepared for the National Commission on Food and Fiber. Attention also was given to the probable impact of possible tariff reductions in the GATT negotiations at Geneva on domestic wool prices and program operations under the National Wool Act. Seasonal adjustment factors for wool consumption were revised.

#### K. Tobacco

During the past year attention was given to the problem of tobacco exports, including probable effect of alternative export programs. This work provided guidance for policy decisions in connection with the tobacco export payment program announced in June 1966. The Rhodesian situation was closely followed because of its importance to the world tobacco trade. Analyses were made of the probable effects of the acreage-poundage program on burley tobacco supplies and yields per acre in the event this program were to be approved by growers. Although 57 percent of the burley growers voting last February favored adoption of the acreage-poundage program, the law requires a favorable vote of more than two-thirds if such a program is to go into effect. Cigarette consumption in selected States was studied to discern whether different trends existed, and to appraise the effects of increases in State cigarette tax rates. In June 1966, cigarette prices to consumers were 11 percent above 2 years earlier. About four-fifths of the rise was due to increases in State cigarette taxes. The national pattern of tobacco products consumption was watched closely to detect differences in direction and rates of change.

## PUBLICATIONS--USDA AND COOPERATIVE PROGRAMS

Food Grains

Askew, W. R. Wheat Situation. Published four times a year. ERS, USDA. Washington, D. C.

Askew, W. R. Rice Situation. Published annually. ERS, USDA. Washington, D. C.

Askew, W. R. Prospects for Wheat. September 1965. Agricultural Situation. USDA. pp. 1-2.

Feed

Clough, Malcolm. Feed Situation. Published 5 times a year. ERS, USDA. Washington, D. C.

Clough, Malcolm. October 1965. Feed Concentrates in Large Supply. Agricultural Situation, USDA, pp. 1-2.

Clough, Malcolm. November 1965. Outlook for Feed in 1966. Paper presented at the 43rd annual Agricultural Outlook Conference. Washington, D. C. 4 pp.

Livestock and Meat

Rizek, Robert L. Livestock and Meat Situation. Published 6 times a year. ERS, USDA. Washington, D. C.

Reierson, Robert. Western Livestock Round-up. Published 12 times a year by Extension Services of various Western States--ERS, FES, and State Extension Services cooperating.

Rizek, Robert L. November 1965. Outlook for Livestock and Meat. 43rd Annual Agricultural Outlook Conference. Washington, D. C. 5 pp.

Rizek, Robert L. March 1966. Hog Outlook. Agricultural Situation, USDA, p. 3.

Rizek, Robert L. March 1966. The Current Cattle Cycle. Livestock and Meat Situation, pp. 25-28.

Rizek, Robert L. April 1966. Current Cattle Cycle has Passed the Peak. Agricultural Situation, pp. 1-2.

Rockwell, George R. July 1966. Foreign Trade in Livestock and Livestock Products. Western Livestock Round-up, pp. 6-8.

Seaborg, Donald. April 1966. Feeder's Margins. Agricultural Situation, USDA, p. 3.

Seaborg, Donald. May 1966. Lamb Prices and Slaughter. Western Livestock Round-up, p. 2.

Livestock and Meat Statistics. August 1966. Supplement for 1965 to Statistical Bulletin No. 333, ERS, USDA, 162 pp.

### Dairy

Mathis, A. G. Dairy Situation, published 5 times a year. ERS, USDA, Washington, D. C.

Freeman, Robert E. July 1966. Prices and Margins for Fluid Milk. Dairy Situation, pp. 25-28.

Mathis, A. G. October 1965. Use of Milk in Manufactured Products. Agricultural Situation, USDA, p. 11.

Mathis, A. G., and Miller, Robert H. November 1965. Supply and Utilization of U.S. Butter. Dairy Situation, pp. 33-40.

Miller, Robert H. October 1965. Facts About Dairy Incomes Reveal Successful Farm Operations. Agricultural Situation, USDA, p. 11.

Miller, Robert H. November 1965. Dairy Advertising and Promotion. Dairy Situation, pp. 41-45.

Miller, Robert H. December 1965. Butter Production Continues to Decline. Agricultural Situation, USDA, p. 8.

Miller, Robert H. May 1966. Milk Prices and USDA Programs. Dairy Situation, USDA, p. 25-29.

Miller, Robert H. July 1966. Consumption and Sales of Milk and Dairy Products, Dairy Situation, p. 19-24. (Reprinted: ERS-302)

Miller, Robert H. September 1966. Trends and Prospects for Dairy Labor Use. Dairy Situation, pp. 26-31.

Schlechty, David L. September 1966. World Dairy Situation. Dairy Situation, pp. 24-25.

### Poultry and Eggs

Bluestone, H. Poultry and Egg Situation. Published 5 times a year. ERS, USDA. Washington, D. C.

Bluestone, H. November 1965. Predicting Prices for Turkeys, Poultry and Egg Situation, pp. 21-24.



Bluestone, H. April 1966. Futures Trading in Fresh Eggs, Poultry and Egg Situation, pp. 15-22.

Selected Statistical Series for Poultry and Eggs Through 1965. May 1966. ERS-232, 51 pp.

### Fats and Oils

Kromer, George W. Fats and Oils Situation, published 5 times a year. ERS, USDA. Washington, D. C.

Kromer, George W. November 1965. Growth in U.S. Soybean Processing Capacity. Fats and Oils Situation, pp. 43-49.

Kromer, George W. January 1966. Trends in U.S. Corn Oil Production and Use, 1947-65. Fats and Oils Situation, pp. 21-28.

Kromer, George W. March 1966. Butter and Lard: Factors Associated with the Current Downtrend in Production. Fats and Oils Situation, pp. 24-31.

Kromer, George W. August 1966. U.S. Cottonseed Industry Adjusting to Short 1966 Crop. Fats and Oils Situation, pp. 23-31.

U.S. Fats and Oils Statistics, 1909-65, August 1966. USDA Statistical Bulletin No. 376, 222 pp.

### Fruits and Tree Nuts

Pubols, B. H. and Blum, M. A. Fruit Situation. Published quarterly. ERS, USDA, Washington, D. C.

Blum, M. A. August 1966. Fruit Processing Prospects Look Promising for Many Kinds. Agricultural Situation, USDA, p. 8.

Pubols, B. H. January 1966. Controlled Atmosphere Storage of Apples. Fruit Situation, pp. 18-23. (Reprinted in February 1966 as ERS-276)

Pubols, B. H. February 1966. Extra-Special Apple Treatment. Agricultural Situation, USDA, p. 11.

### Vegetables and Potatoes

Kuryloski, D. S. Vegetable Situation. Published quarterly. ERS, USDA. Washington, D. C.

Kuryloski, D. S. October 1965. Potato Utilization and Consumption Trends. Vegetable Situation, pp. 22-25.

### Cotton and Other Fibers

Donald, James R. Cotton Situation. Published 6 times a year. ERS, USDA, Washington, D. C.

Cathcart, William E. and Donald, James R. July 1966. Analyses of Factors Affecting U.S. Cotton Exports. Cotton Situation, pp. 1-2.

Wittmann, Charles H. and Donald, James R., September 1966. Fibers Used in Textiles Delivered to the Military Forces. Cotton Situation, pp. 18-20.

Statistics on Cotton and Related Data. October 1965. Supplement for 1965, USDA Statistical Bulletin No. 329.

### Wool

Clayton, Larry B. Wool Situation. Published quarterly. ERS, USDA, Washington, D. C.

Supplement for 1965 to Wool Statistics and Related Data, 1920-64, August 1966. USDA Statistical Bulletin No. 363.

### Tobacco

Conover, A. G. and Sackrin, S. M. Tobacco Situation Published quarterly. ERS, USDA. Washington, D. C.

## AREA NO. 2. SUPPLY, DEMAND AND PRICE OF AGRICULTURAL COMMODITIES

### PROBLEM

Producers, processors, distributors, and consumers need information based on accurate quantitative knowledge of the interrelationships among prices, production and consumption of farm products, and other factors. Similarly, Congress and the administrators of farm programs need such economic information to evaluate existing and alternative programs or policies in terms of their probable impact on production, consumption, and prices at both the farm and retail levels. The research program in this area provides the information for strengthening outlook and situation work, and for appraising alternative policies for agricultural products.

### USDA AND COOPERATIVE PROGRAM

The program of basic research into the factors affecting prices, supply, and consumption of principal agricultural commodities is concerned with four broad areas: (1) Measurement of consumer response to price, income, and other factors; (2) measurement of producer response to price and other factors; (3) measurement of the effect of supply and demand factors on prices to farmers and to consumers; and (4) improvement of statistical techniques for measuring economic relationships in agriculture.

A facet that is becoming increasingly important in carrying out the statistical and econometric work of the Division is the use of electronic computers. The program includes continual evaluation of latest developments in the field, equipment and computer programs available, and use of improved equipment and techniques in problem solving.

The USDA program of research in this area involves 7.0 scientific man-years and is located in Washington, D. C. The total effort is distributed in man-years by research areas as follows: Livestock and meats 1.0; feed grains and other feeds 0.5; poultry and eggs 0.5; fats and oils 0.5; vegetables and potatoes 1.0; cotton and other fibers 1.0; tobacco 0.5; improvement of statistical techniques 2.0.

### PROGRAM OF STATE EXPERIMENT STATIONS

Many of the States carry on supply, demand, and price analyses for the products of their State. Much of the research is commodity oriented, though some projects are of a highly mathematical and theoretical nature aimed at improving price analysis methodology. A total of about 18 scientific man-years is devoted directly to this area of research. But a larger contribution flows from much of the research reported in the Marketing Economics Multiple Use Report under Area 1, Section B, entitled "Organization and Performance of Markets--Prices, Margins and Costs." The total State Station effort devoted to research under that title amounts to 85 scientific man-years.



## PROGRESS--USDA AND COOPERATIVE PROGRAMS

A. Feed Grains and Other Feeds

A special study was made of major factors influencing high-protein feed prices. Much of the analysis was directed to soybean meal, but factors associated with prices of cottonseed meal, linseed meal, gluten feed, meat meal and fish meal also were studied. The four factors that stood out as the most important in influencing prices of these high-protein feeds were: the quantity of soybean meal or total high-protein feeds fed; the index of prices received by farmers for livestock and livestock products, the number of high-protein consuming animal units, and production of commercially prepared feeds. The results of this analysis were presented in the April issue of the Feed Situation. Another special study was conducted on trends in supplies and prices of hay and roughage consuming livestock by major regions of the United States. Results were published in the August issue of the Feed Situation.

B. Livestock and Meat

An analysis of the seasonal variation in hog slaughter, hog and pork prices, and pork consumption was completed and results published in the August 1966 issue of the Livestock and Meat Situation. Emphasis was placed on changes in seasonal patterns over time and on the relative contribution of the seasonal nature of production to total variation in hog slaughter, prices and consumption. Barrows and gilts in July reached a seasonal low in slaughter 24 percent below the 12-month average and a seasonal high in prices about 12 percent above the 12-month average. Slaughter then increased to a high 15 percent above average in October, and prices declined to a low 4 to 5 percent below average in November. Seasonality accounted for about 70 percent of the month-to-month changes in hog slaughter, but only 40 to 45 percent in the variation in hog prices. A similar analysis is underway for cattle slaughter and cattle and beef prices.

A paper was prepared and presented at the summer meeting of the American Farm Economics Association on the "Performance of the Livestock-Feed Grain Sector." There has been a trend in the past two decades toward greater stability in feed grain production and prices and in livestock production. However, the same definite trend cannot be detected with respect to prices received by farmers for livestock, particularly hogs. Forecasts of placements and marketings of fed cattle are based partly on relationships of the past. A limiting factor in making analyses designed to measure these relationships has been the lack of a uniform series for past years. A series for marketings and placements was developed and published in the October 1965 Situation.

Progress was made on improving the quarterly supply model developed in 1962 for determining the number of sows farrowing and the slaughter and price of hogs. Additional factors are being considered to adapt the model to recent structural changes in the industry. Also, further work was done to refine models used in forecasting domestic production of beef, veal, mutton, and



goat meat for the coming calendar year. These forecasts are required to determine whether the President proclaims import quotas under the 1964 meat import quota legislation (Public Law 88-482).

### C. Poultry and Eggs

A statistical analysis was made of factors influencing turkey prices during the heavy and light marketing period. Results, which include price-estimating equations, were published in the April 1966 issue of Agricultural Economics Research. Demand for turkeys at the farm level was found to be inelastic during the main fall marketing period, September-December, but elastic in January-August. Consequently, prices in the fall were considerably more responsive to changes in supplies than prices earlier in the year. Fall turkey prices were found to be measurably influenced by only two factors--per capita turkey supplies and the change from a year earlier in per capita poultry consumption in January-August. Other things being equal, an increase of 5 percent in per capita turkey supplies from commercial sources (excluding USDA purchases) during September-December was followed, on the average, by a 10-percent decrease in the turkey price. Year-to-year changes in per capita poultry supplies (including chicken) prior to the main marketing season were significant in affecting the September-December price, while the absolute level of per capita chicken supplies during this heavy marketing period was not. This strongly suggests that heavy consumption of poultry early in the year tends to weaken demand for turkey later in the year. In the January-August period, per capita supply of chicken did measurably affect turkey prices.

This Division is participating in an ERS study on interregional competition in eggs. Emphasis is on problems faced by the Midwestern egg industry in attempting to maintain its historical role as the "egg basket of the Nation." Attention will center on structure and practices of the industry in various regions and the probable regional shifts in egg production, given prospective changes in the producing, input-supplying, and marketing segments of the egg industry. The first phase of this study is expected to be released late in 1966.

### D. Food Grains

During the past year increased work has been carried out on the measurement of demand and price for wheat, rice and rye. With the loan program having diminished as a price-making force in the wheat markets, and with increased use of wheat for feed, new price estimating methods have been developed. These techniques take greater account of privately held stocks of wheat and the feed grain situation generally; they are more concerned with individual areas and classes of wheat than formerly was the case. A study was made for the State Department dealing with rice in Southeast Asia and the world rice outlook over the next five years.

### E. Potatoes

Exploratory analyses have been made of the relationship between supply and price of potatoes on a regional basis. Preliminary results suggest that there is an important degree of market isolation for major fall-crop areas, especially during the fall months. As the marketing season progresses, however, the extent of isolation diminishes, and regional prices become more responsive to supply changes in other areas. Although the predicting equations furnished price estimates that were fairly close to observed prices, further refinement will be necessary, particularly with respect to measuring the influence of changing processor demands.

### F. Cotton and Other Fibers

Analysis of the Factors Affecting U.S. Cotton Exports was completed and published as Agricultural Economics Report No. 90. Included in the report were separate analyses of world cotton consumption; foreign Free-World cotton consumption; foreign Free-World cotton acreage; and effects on U.S. cotton exports of relative prices of U.S. and Mexican-grown cotton in import markets. The U.S. share of world cotton trade has dropped sharply since World War II because production in foreign countries has increased at a faster rate than cotton consumption. The level of U.S. cotton prices in world markets has had a small but statistically significant effect on both cotton acreage and cotton consumption in foreign countries. However, the combined effect of small changes in acreage, production, and consumption in foreign countries was found to be relatively large. A 1-cent decline in the U.S. price, by reducing foreign production and increasing foreign consumption increased the potential for U.S. exports by 235,000 bales.

A study was made of the role of price and other factors in the use of fibers in fabrics for the military, and impact on cotton consumption of the increasing use of fabric blends. Although military purchases of cotton and synthetic fiber blends have increased, such uses are small in relation to use of 100 percent cotton fabrics. Also, cotton is often the major component of the fabric blends.

### G. Tobacco

Continuing analysis was made of trends in utilization of tobacco as affected by recent technological changes, and their impact on growers. Review was made of data made available on a confidential basis from two surveys conducted by the Public Health Service, relating to tobacco use, smoking and health, and consumer attitudes. Arrangements have been made for consultation with PHS in connection with future surveys. Additional analysis was made of alternative methods of supply adjustment. Also, per acre yields resulting from the flue-cured tobacco acreage-poundage program were studied, and possible methods of adjusting yields established for individual farms were explored.

#### H. Improvement of Statistical Techniques

The electronic computer continues to play an important supporting role to the Division's research program. Latest developments in the computer field, particularly with respect to new programs, are continually assessed. Emphasis the past year has been on working with the Statistical Reporting Service to insure a smooth transition to new computer equipment (IBM 360) acquired by the SRS Washington Data Processing Center.

Four computer programs have been converted and are presently in operation on the IBM 360. These include general programs for multiple regression and matrix procedures as well as two special-purpose programs. One special program is designed to convert textile import statistics to a raw fiber equivalent base and then summarize by specified fibers, groups and classes. The second is used to project values for certain price, production and quantity series in the feed-livestock area. All four programs were written in the FORTRAN coding language which facilitated conversion. A new computer program is being developed now for Cotton and Other Fibers whereby data reported by the Department of Defense on deliveries of textiles to the military establishment will be tabulated and converted to fabric and raw fiber equivalents.

A survey was made of one-half the readership of the Livestock and Meat Situation to determine how the report was used and how it could be improved. Of 3,500 schedules sent out, 2,366 were received and edited; the data were punched on cards and tabulated by various categories. Plans are being formulated for similar surveys of other situation reports published by the Division.



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Livestock and Meat

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## RELATED PUBLICATIONS OF STATE EXPERIMENT STATIONS

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## AREA NO. 3. FARM INCOME

## PROBLEM

Timely and accurate statistical information and analyses on the farm income situation and outlook are essential to farmers, legislators, administrators, and others in developing production and marketing plans and in evaluating the needs for and operations of public programs for agriculture. Changes in the structure of commercial agriculture require the development of new methods and sources of data to maintain and improve the representativeness of farm income measures. Quantitative measures of the interrelationships between agriculture and other sectors of the economy are needed for assessing the impact of changes in the farm sector on related nonfarm sectors and the impact of changes in nonfarm sectors on farming. Centralization and maintenance of a large number of economic time series pertaining to agriculture is required to permit prompt and accurate handling of a continuous flow of a wide diversity of requests for economic data on agriculture.

## USDA AND COOPERATIVE PROGRAM

The Department has a continuing long-term program of economic and statistical research which includes the development of new methods and sources of data and the regular preparation of current estimates and projections. This work is located in Washington, D. C. The Federal program of research in this area involves 10 professional man-years. This is divided as follows: (a) Current estimates of farm income and expenditures, 4 man years; (b) research and methods relating to farm income, 2.5 man years; (c) analysis of the impact of alternative farm programs on agriculture and the rest of the economy, 2 man years; (d) centralization and maintenance of economic data pertaining to agriculture, 1.5 years.

## PROGRAM OF STATE EXPERIMENT STATIONS

The States rely considerably upon the USDA for research into the farm income situation. Some States conduct supplementary research, especially into certain aspects of farm expenses. Farm account records also play an important role in providing considerable detail as to what is happening to farm income in certain types of farming areas and even generally. A total of 1.0 scientific man-years is devoted to this area of research.\*

## PROGRESS - USDA AND COOPERATIVE PROGRAMS

A. Current estimates of farm income and expenditures.

Farmer's realized net income in the first half of 1966 was at a seasonally adjusted annual rate of \$16.4 billion--\$2.6 billion above the rate in the first half of 1965. An appraisal of production, marketing and price prospects for the remainder of 1966 points to a realized net farm income for

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\*Also included in Marketing Economics Division Report.

the year which may be some \$1.5 billion above the 1965 level of \$14.2 billion, which would be one of the best years on record, exceeded only in 1947 and 1948.

Realized gross farm income in 1965 was \$44.9 billion, a record high, and some \$2.6 billion higher than in 1964. Cash receipts from farm marketings, which make up almost 90 percent of realized gross farm income, were estimated at \$39.2 billion in 1965, also a record high, and \$2.3 billion higher than in 1964. Direct Government payments to farmers rose almost \$300 million to a level of about \$2.5 billion compared with about \$2.2 billion in 1964.

Farm production expenses rose sharply in 1965 due mainly to higher prices of production goods and services, but also to some increase in the volume of purchases. The estimated total of \$30.7 billion spent to run the farm business was \$1.3 billion more than in 1964. However, with realized gross farm income rising faster than production expenses, realized net farm income in 1965 was some \$1.3 billion higher than the \$12.9 billion total of 1964.

Farm operators' realized net income per farm reached a record high of \$4,210 in 1965 compared with \$3,716 in 1964. The rise in aggregate realized net farm income and to a lesser extent the continuing decline in farm numbers contributed to the sharp increase in average net farm income. State estimates for 1965 show that realized net farm income per farm rose in all regions of the country. Some 43 States showed an increase from 1964 to 1965 in their net income per farm average, while 7 States were lower.

The per capita personal income of the farm population from all sources rose sharply in 1965 to a level of \$1,664, of which \$1,112 came from farm sources and \$552 from nonfarm sources. The per capita disposable personal income (after taxes) of the farm population in 1965 was \$1,563 compared with \$1,269 in 1964. In most recent years the per capita disposable personal income of the farm population has risen. It was only 55 percent of the per capita disposable personal income of the nonfarm population in 1960; in 1965 it was about 63 percent.

During the reporting period, work continued on systems analysis preparation for transferring a substantial part of the gross farm estimating work to automatic data processing equipment. The systems analysis should be completed, and programming and testing largely completed during the next reporting period.

Detailed cash receipts estimates by commodities were developed and published for the first time for the States of Alaska and Hawaii covering 1964 and 1965. During the previous reporting period estimates of the major components of farm income in Alaska and Hawaii were published for the first time, starting with the year 1960.

The demand for information on farm income by States increased during the reporting period. This required the preparation of additional statistical series showing farm income developments in each of the States for selected periods such as 1961-1965 compared with 1957-60, and 1965 compared with 1960.

Preliminary data from the 1964 Census of Agriculture became available for some States during the reporting period. These Census data will provide benchmark data for reexamination and possible revision of certain accounts used in the farm income estimate work.

An investigation of the possibility of using data collected through the various farm record keeping programs in the States was undertaken. The object is to improve or supplement existing methods of estimating annual expenditures by farmers for the various accounts making up the total farm production expense picture. Data were received from 23 States during the reporting period. Examination of the available data and its adaptability to our estimating work will be undertaken in the upcoming reporting period.

#### B. Research and methods relating to farm income

1. Development of estimates of income of farm operator families by value of sales classes.--Distributions of number of farms, farm income and expenses, and off-farm income of farm operator families by value of sales classes were revised and the series extended through 1965. These data were published in the July 1966 Farm Income Situation. They replace estimates published in earlier issues. The revised estimates incorporate new data which provide more refined estimates of income, expenses and Government payments by value of sales classes than were possible previously. These estimates reflect a limited amount of preliminary 1964 Census information regarding the change in the distribution of number of farms from 1959 to 1964.

The new estimates show that farms with value of sales of \$10,000 or more account for increasingly larger percentages of the number of farms, cash farm income, production expenses, and net farm income. In 1965, for example, an estimated 1,018,000 of such farms accounted for \$34.3 billion in cash receipts (including government payments) out of a total of \$41.6 billion for all farms combined. In relative terms, this group comprised 30.2 percent of all farms, received 82.3 percent of cash receipts, paid 83.8 percent of farm production expenses, and retained 69.4 percent of realized net farm income. In 1959, there were an estimated 828,000 of these high production farms. In that year, they made up 20.2 percent of all farms, received 70.6 percent of cash income, paid 71.8 percent of production expenses, and retained 55.4 percent of net farm income.

In contrast, farms with value of sales of less than \$10,000 are declining in number, and in proportion of cash receipts and net income. In 1965, although these farms accounted for nearly 70 percent of all farms, they received only about 18 percent of cash receipts and 31 percent of net income.



In 1959, they shared in cash receipts and realized net income to the tune of 29 and 45 percent, respectively.

The total income position--off-farm income as well as farm income--of farm families in the different sales groups reveals several important facets of the income structure within Agriculture. For example, of the average total income in 1965 for farm families in the \$20,000 and over sales group, by far the largest share came from farm sources--over \$8.50 out of every \$10 of total income. As the scale of farming operations declines the relative dependence upon off-farm sources of income increases. Thus, in 1965 for farm operator families in the less than \$2,500 sales group, about \$7.50 out of every \$10 of total income came from off-farm sources.

Preliminary tabulations of income and expenditures of U. S. farmers by economic class and by type of farm were developed from the 1961 Consumer's Expenditure Survey and were used to revise distributions of government payments by economic class of farm.

Additional data from the 1961 Consumer's Expenditure Survey and from the 1964 Census of Agriculture will provide new benchmarks for use in reexamining and, where necessary, revising the data on number of farms and farm characteristics by value of sales groups.

Efforts are continuing to obtain information on farms and farm characteristics by economic class of farm from a general purpose ERS Survey. This project involves cooperation among the several Divisions of ERS.

## 2. Measurement and analysis of relationships between Agriculture and other Segments of the Economy.

Estimates of interindustry sales and purchases transactions for the U. S. economy in 1958 were published by the Department of Commerce for the first time in the September 1965 Survey of Current Business. Revised "direct" and "total" requirements tables were also included in that report. The staff of the Farm Income Research and Methods Section cooperated by providing estimates of the input-output data pertaining to agriculture. This work was done under a major new cooperative program involving the periodic preparation of such information as part of an integrated system of national economic accounts. The data indicate the value of interindustry sales from each of two agricultural sectors to intermediate and final consumers. The sectors are (1) livestock and livestock products, and (2) other agricultural products. Also shown are the value of purchases by these two agricultural sectors from intermediate farm and nonfarm industries, and the value added or gross product originating in agriculture.

Currently, an expanded input-output table of the U. S. economy is being prepared for 1963, the latest year for which complete information is available. The project is under the leadership of Office of Business Economics, USDC. Estimates will be developed for 17 agricultural sectors. The Farm

Income Research and Methods Section is preparing a report showing additional detailed interindustry transactions for seventeen individual agricultural industries. Also planned is a recalculation of "direct" and "total" requirements based on the revised and disaggregated interindustry flow data for 1958.

Information from the previously completed input-output study (1958) and other related data are presently being used to develop estimates of the output, employment, and income in the national economy directly and indirectly associated with agriculture. Such information provides a basis for determining the impact of alternative program adjustments for specific agricultural commodities on the various sectors of the economy.

3. State estimates of total income of farm people--Plans are being made to develop benchmark estimates of off-farm income of farm operator families by States, based on information to be obtained from the 1964 Census of Agriculture. These data are necessary for making State and regional estimates of the income of farm people relative to nonfarm people; also for determining the importance of off-farm income relative to farm income in different parts of the country. The 1964 data are being compared with income data available from the 1960 Census of Population and the Commerce Department's series on total personal income by States. This will provide a measure of the relationship between changes in the income position of farm people versus nonfarm people below the national level.

4. Editing a memorial volume of the collected works of John M. Brewster--At the request of the Administrator of ERS and the Under Secretary, a memorial volume of the late John M. Brewster's works is being compiled for publication. Primary responsibility for selecting, organizing, and editing these works lies in the Farm Income Research and Methods Section. Some 19 of Dr. Brewster's writings have been selected and organized into five sections as follows: (1) beliefs and values in American democracy--origins and emerging problems, (2) agriculture policy problems and the family farm, (3) efficiency and economies of size, (4) agriculture and economic development, and (5) research and the social sciences.

A brief introduction is being written for each section. A biographical sketch and a general introduction will also be prepared. The book will be published, probably at one of the university presses.

C. Analysis of the impact of alternative farm programs on agriculture and the general economy.

In response to a directive from Congress, a study of the parity income position of commercial family farmers is being made. Several alternative standards for returns to resources used in farm production have been developed. These standards will be compared to income by value of sales classes as soon as more complete data are available from the 1964 Census of Agriculture.



The basic concept underlying these parity return standards is opportunity cost or alternative earnings capacity of the resources supplied by the farm operator and his family. Opportunity-cost wage rates are estimated for the farm operator by economic class and for both hired and unpaid family labor. These wage rates are based on the earnings of city dwellers having similar age, education, and proportion of males. For economic classes I, II, and III (farms producing \$10,000 or more of gross sales) the opportunity cost wage rate is approximately equal to the National average wage rate of workers in manufacturing. The other economic classes have lower opportunity-cost wage rates.

A number of different interest rates and methods of measuring alternative returns to capital have been devised. Some of the more promising rates are landlord rental returns, farm mortgage interest rates, common stock returns, and returns to a portfolio of various securities.

These parity return standards will be applied to 1959, 1964, 1965, and 1966 data as soon as the latest Census data are available. A committee of five university economists is serving as consultants to ERS for planning and carrying out this study. A report of the findings and recommendations will be submitted to the Congress by the Secretary of Agriculture.

#### D. Centralization and maintenance of economic data pertaining to agriculture.

The role of agriculture in the food industry has received increased emphasis during the reporting period. Information supplied to the National Commission on Food Marketing dealt largely with longer-time relationships. The effects of current agricultural programs, and consideration of future needs have required special analyses. Higher food costs and inquiries about the effects of higher prices for farm products on retail prices have resulted in increased requests for information.

To meet the demand for current information, a table of daily market prices for several important agricultural products is prepared and distributed to officials of the Department. Weekly wholesale price indexes for selected commodity groups, and weekly prices for several agricultural products in the National Stockpile also are compiled for official use.

During the past year many preliminary returns from the 1963 Census of Manufactures and 1964 Census of Agriculture became available for dissemination. A series of brief statements describing farm developments in each State was prepared as data became available. Reports of the Census of Manufactures are available for answering requests or for use by commodity specialists.

A looseleaf handbook providing current statistical information is prepared and circulated regularly. Distribution is made to approximately 130 policy makers in the Department and other high-ranking individuals.

Charts, tables, and graphs are provided for use in publications or special analyses or reports. These include charts prepared in ESA for Handbook of Agricultural Charts 1966 and for use in budget hearings. Other major contributions of statistical data were made to the Economic Report of the President, the Statistical Abstract of the U.S., the World Almanac, the Historical Statistics of the U.S., and Agricultural Statistics. Checking and verifying basic economic data (as per Secretary's Memorandum No. 1476) for public release was done on request.

The parity ratio adjusted to take account of direct payments to farmers is prepared for publication in the January issue of the SRS report Agricultural Prices.



## PUBLICATIONS--USDA AND COOPERATIVE PROGRAMS

Current Estimates of Farm Income and Expenditures

The Farm Income Situation, published in February, April, July, and November in the reporting period.

The Supplement to the Farm Income Situation for July 1966, August 1966.

## AREA NO. 4. ECONOMIC OUTLOOK, CONSUMPTION AND LONG-RUN PROJECTIONS

### PROBLEM

This area of research includes comprehensive continuing analyses of changes in domestic and foreign economic activity, related agricultural policy, technological developments, food consumption and nutrition, and their impact on the agricultural situation and outlook. These analyses are concerned with the current economic situation and outlook, longer-run projections, and policy implications. They require the development of statistical data relating to the demand for farm products, domestic consumption trends, foreign trade, the supply-utilization balance for major farm products, farm prices and incomes, and general economic activity. Such data and economic analyses based on them are essential to farmers, legislators, administrators, private businessmen, and others concerned with the development and appraisal of policy and programs and with changes in the production and marketing of farm products.

### USDA AND COOPERATIVE PROGRAM

The Department has a continuing long-term program designed to appraise the economic outlook, consumption of farm products, longer-run prospects for agriculture, and policy alternatives. The staff participating in this work currently consists of 11 professional man-years. The work is located in Washington, D. C. It includes (a) demand analysis and agricultural outlook, 3 professional man-years; (b) long-run agricultural projections, 3 professional man-years; and (c) supplies and utilization of food and other agricultural products, 5 professional man-years.

### PROGRAM OF STATE EXPERIMENT STATIONS

After World War II, several States made long-run projections studies but none has been reported in recent years. At least ten States are analyzing food expenditure and consumption data obtained through diaries maintained by household panels and through surveys. The total research effort in terms of man-years is not known.

### PROGRESS -- USDA AND COOPERATIVE PROGRAMS

#### A. Demand analysis and agricultural outlook

The agricultural situation and outlook for 1966 was reported in the Demand and Price Situation in November 1965 and again in April 1966. The current agricultural and general economic situations were analyzed in January and July. Other statements on the general agricultural and business situations

were released through the Farm Index, Agricultural Statistics, The Handbook of Agricultural Charts, radio broadcasts, presentations at regional and National outlook conferences, special articles, memoranda, and correspondence.

Numerous developments in the general economy were analyzed with respect to their affect on the demand and supply of farm products, prices received and paid by farmers, and the general agricultural situation and outlook. Appraisals were made of: (1) changes in social security legislation and excise taxes, (2) increases in Federal and State and local Government spending due to the Viet Nam conflict and governmental programs, (3) the impact of high interest rates and restrictive monetary policies, (4) weakness in residential construction activity, (5) additions and improvements to productive capacity, (6) changes in the balance of payments, (7) advances in technology, and (8) alternative farm policies. In addition, many analyses of short-term economic developments related to the farm sector and to farm policy were made.

Statistical analyses and frameworks were developed to explain changes in business conditions, employment, consumer income, and the demand for farm products. These analyses included alternative dynamic models which relate current demand, production, and investment to these same variables in previous periods. Investigations were also made using auto-correlation models. Comparisons were made of these models with respect to tracking or estimating ability over several quarters.

#### B. Long-run agricultural projections.

Projections for the major agricultural commodities and related non-agricultural quantities such as income growth and population were completed for 1980 and published. Commodity projections included production, imports, domestic requirements, exports, and prices.

These projections together with new procedures to estimate supply response for major crops were used to prepare a study of the ability of U. S. agriculture to supply the food-aid needs of non-communist developing countries of the world. The specific objectives were: (1) to compare the U. S. potential for providing food-aid, mainly through grains, with estimated grain needs of developing countries over the next 20 years, (2) to project Government costs of three food-aid alternatives, and (3) to estimate the impact of these alternatives on U. S. Agriculture. The general conclusion is that the U. S. could provide for the food-aid needs of the developing countries through 1975 even if two-thirds of the food-aid grain exports must consist of wheat and rice. Without a two-thirds food grain export restriction, food-aid could be even greater because more of the feed grains, corn, grain sorghums, and barley, are produced per acre of land. Expenditures for expanded food-aid programs would not be offset by decreases in cost of supply-management programs according to estimates developed in



this study. Program costs do not decrease, because the cost of commodities shipped for food-aid includes not only acquisition cost--based on market prices--but also the cost of transportation and handling required to transfer these commodities to the recipient countries. Thus, food-aid programs of the type analyzed are expected to be more costly than crop diversion programs.

Work has continued on the feed-livestock model. This model is presently being used to make estimates for the Programming, Evaluation and Planning Group and the Staff Economist Group under varying program assumptions. Work is proceeding on a more complex model for pork which will include not only prices and production, but sows farrowing, pigs saved, and total inventory of hogs. Additions to the livestock-feed model are being planned which show the implied inventory of beef cattle for each level of production and price, much the same as the work being done in the pork sector.

Because of expanding food-aid needs of the world, a special study explaining the structure of the wheat economy has been undertaken. Demand and production functions by classes of wheat have been derived and used in estimating the amount of wheat acreage necessary to replenish stocks and meet food-aid needs. The study is presently being expanded to include a longer-run analysis. Plans are to publish the results of the complete study in a technical bulletin. The wheat model will be integrated with a more general food grains model in order to predict price, production, and consumption of the food grains (wheat and rice).

Several papers dealing with long-run projections methodology and forecasting were published in professional journals during the year. Work is nearing completion on a technical bulletin which develops and analyzes various dynamic models for making long-term projections.

#### C. Supplies and utilization of food and other agricultural products.

The long-term program of measurement and appraisal of the supply and consumption of foods was continued. Per capita food consumption indexes were published for the major food products and for total food. These indexes were computed on an annual basis but recomputed quarterly and published in the National Food Situation, and in the 1964 Supplement to U. S. Food Consumption, Sources of Data and Trends, 1909-63. Food consumption trends and patterns, retail food price movements, changes in food expenditures, and foreign trade in food products were evaluated quarterly and short-run outlook published in the National Food Situation.

Supply and utilization tables were prepared for the major food products. These tables provide the primary basis for calculation of per capita food consumption indexes and the index of supply and utilization of all farm commodities. Previously published tables were updated in the 1964 Supplement

to U. S. Food Consumption, and dittoed supply and utilization tables for recent years were distributed quarterly within the Department to about 80 users. The internally distributed tables carried forecasts through 1966. The index of supply and utilization of farm commodities was calculated in detail; summary tables were published in the National Food Situation and Agricultural Statistics. A review of the basic methodology that underlies this set of index numbers was continued.

The annual outlook statement, "Outlook For Food Consumption, Prices, and Expenditures," was presented at the National Agricultural Outlook Conference, Washington, D. C. in November, 1965.

Forecasts of retail food prices received considerable emphasis this year. In addition to regularly published forecasts, special reports were made frequently at the request of Department officials. Additional resources were used in refining forecasting methods by the use of regression models.

Increasing attention was given to quarterly and regional estimates of per capita food consumption. Quarterly food consumption estimates for selected food products were published in the Supplement for 1964, U. S. Food Consumption (1965).

The Food Consumption and Utilization Section represented the Economic Research Service on the Southern Regional Technical Committee, SM-34, "Demand for Food," organized during the year. It is proposing to analyze demand for food by subregions within the southern States and by major regions outside the South.

Analyses of prices, supplies, and demands for sugar and other sweeteners and for coffee, tea, cocoa and other tropical products were continued. Outlook statements and special articles for these products were carried in the National Food Situation. Special commodity statements for other foods, except fishery products, were discontinued in the National Food Situation to avoid repetition with information in other Situation reports and to expand the overall outlook among food products.

Tables and charts on food consumption, prices, and expenditures were prepared for the 1965 Handbook of Agricultural Charts. Per capita food consumption tables were prepared for Agricultural Statistics and the Statistical Abstract of the United States. Food consumption balance sheets were prepared for FAO and OECD. Contributions were made to the Family Economics Review and the Farm Index.

## PUBLICATIONS -- USDA AND COOPERATIVE PROGRAMS

Demand Analysis and Agricultural Outlook

Demand and Price Situation. Published quarterly.

Egbert, A. C. August 1966. Agricultural Situation and General Agricultural Outlook. Midwest Agricultural Outlook Conference, Peoria, Illinois. Azograph, 20 pages.

Long-Run Agricultural Projections

Crom, Richard and Walters, Forrest. October 1965. Marketings and Placements of Cattle on Feed. Livestock and Meat Situation, LMS-145, pp. 31-39.

Daly, R. F. and Egbert, A. C. February 1966. A Look Ahead For Food And Agriculture. Ag. Econ. Res., Vol. XVII, No. 1, pp. 1-9.

\_\_\_\_\_. February 1966. Statistical Supplement to A Look Ahead For Food And Agriculture. Economic and Statistical Analysis Division, ERS. Mimeograph, 15 pages.

Egbert, A. C. and Reutlinger, S. December 1965. A Dynamic Long-run Model of the Livestock-Feed Sector. Jour. of Farm Econ., Vol. 47, No. 5, pp. 1288-1305.

Reutlinger, S. February 1966. Analysis of a Dynamic Model, With Particular Emphasis on Long-run Projections. Jour. of Farm Econ., Vol. 48, No. 1, pp. 88-106.

Supplies and Utilization of Food and Other Agricultural Products

Ainsworth, R. G. May 1966. The Importance of Imports as a Source of Food. National Food Situation, NFS-116, pp. 37-41.

Clough, M. August 1966. Food Consumption of Corn, Oats, and Barley Products. National Food Situation, NFS-117, pp. 27-29.

Foreign Regional Analysis Division, Eklund, H. M. and Hiemstra, S. J. February 1966. Food Around the World. National Food Situation, NFS-115, pp. 32-43.

Friend, Berta. November 1965. Nutritional Review. National Food Situation, NFS-114, pp. 20-23.



- Gray, Frederick D. November 1965. The Sweetener Market--Trends and Prospects. National Food Situation, NFS-114, pp. 30-39.
- Gray, Frederick D. February 1966. The Maple Sweetener Situation. National Food Situation, NFS-115, pp. 26-31. Reprinted as ERS-283.
- Hiemstra, S. J. November 1965. Food and Beverage Sales by the Retail Trade. National Food Situation, NFS-114, pp. 24-29. Reprinted as ERS-268.
- Hiemstra, S. J. November 1965. Outlook for Food Consumption, Prices, and Expenditures. Annual Agricultural Outlook Conference, Washington, D. C.
- Hiemstra, S. J. December 1965. Food Consumption, Prices, and Expenditures. Family Economics Review, ARS-62-5, pp. 9-12.
- Hiemstra, S. J. August 1966. Seasonally Adjusted Retail Food Price Indexes. National Food Situation, NFS-117, pp. 30-36.
- Hiemstra, S. J. and Eklund, H. M. August 1966. Food Expenditures in 1960-61. National Food Situation, NFS-117, pp. 37-47.
- Hiemstra, S. J. August 1966. Concentration and Competition in the Food Industries. Jour. of Farm Econ., Vol. 48, No. 3, Part II, pp. 137-147. A second honorable mention award winner in AFEA essay contest, Effective Competition and Changing Patterns in the Marketing of Agricultural Products.
- National Food Situation. Published quarterly.
- Supplement for 1964 to U. S. Food Consumption, 1965. 30 pages.

## AREA NO. 5. AGRICULTURAL HISTORY

### PROBLEM

Historical research on major developments in farming and major changes in policies, programs, and organization of the Department of Agriculture provides a background for understanding current agricultural problems, for developing governmental programs aimed at solving these problems, and for developing a wider understanding of the past achievements of agriculture and the Department. Historical studies have provided some of the basic information needed by the Secretary of Agriculture, advisory committees appointed by the Secretary of Agriculture, Executive Offices of the President, presidential commissions, and the Congress in formulating and evaluating agricultural programs and policies. The accuracy of the studies and the promptness with which needs have been met have contributed to the effective functioning of the Office of the Secretary and other policy-making offices and agencies.

### USDA AND COOPERATIVE PROGRAM

The Department has a continuing long-term program of historical research carried out by historians working in close cooperation with economists, statisticians, physical scientists, political scientists, sociologists, and others. The program involves both basic research and the application of the results of basic research to current problems.

The effort devoted to the project totals 6.2 professional man-years, including:

- (a) work on the development of agriculture in the United States, which currently involves 1.7 professional man-years; and
- (b) work on the history of USDA programs and organization, which currently involves 4.5 professional man-years.

### PROGRAM OF STATE EXPERIMENT STATIONS

During the past year, the University of California, Davis, devoted 2 scientific man-years to this area.

## PROGRESS--USDA AND COOPERATIVE PROGRAMS

A. Development of agriculture in the United States

As the only office in the Federal Government conducting historical research on the development of American agriculture, the staff carries out numerous analyses of particular problems for the Administrator, the Office of the Secretary, other Government agencies, and research workers in the land-grant colleges and elsewhere. In some cases the analyses are published, but many are not.

Investigations of the relationships between economic conditions and major changes in agricultural technology continued on a limited scale. These included papers on the mechanization of sugar beet and tomato production.

Some work continued in the preparation of a comprehensive analytic index or guide to source material on American agricultural history. Current work is concentrated on sources for the history of agricultural technology with emphasis on farm mechanization, a subject upon which many inquiries are received every year, and a preliminary index has been prepared under a cooperative agreement with the University of California.

Basic research on the history of farm organizations continued during the year. Information on this topic was supplied to the Office of the Secretary and to scholars in land-grant institutions.

B. History of USDA programs and organization

Work on historical studies of agricultural policies and programs was emphasized during the past year and will continue to receive emphasis. A number of staff studies were prepared upon assignment from the Office of the Administrator and the Office of the Secretary. These included such topics as a documentary history of the technical assistance program for India, a review of the concept of Federalism as related to the Department, and notes on the place of the administrative officer in the Department. Considerable time was devoted to service work in answering requests for historical information from Department and other Government officials, farm organizations, land-grant institutions and the public.

Research completed on the history of price support and adjustment programs was important in preparing several of the staff studies needed by the Office of the Secretary. During the year, a comprehensive history of production adjustment, price support and surplus disposal programs for wheat was undertaken and virtually completed.



At the request of and in cooperation with the foreign analysis divisions of the Economic Research Service and the Foreign Agricultural Service, work is under way on a comprehensive history of U. S. technical assistance programs in agriculture. Drafts of five chapters have been completed and circulated for comments. This study will continue as a major project during the coming year.

At the request of the Department's Office of Personnel, a history of personnel management in the Department has been undertaken. The project is significant outside the Department in that USDA personnel programs have influenced many other government agencies. Drafts of five chapters have been completed and circulated for comments.

#### PUBLICATIONS -- USDA AND COOPERATIVE PROGRAMS

Rasmussen, Wayne D., and Baker, Gladys L. 1966. A Short History of Price Support and Adjustment Legislation and Programs for Agriculture, 1933-65. Agricultural Economics Research. Vol. 18, pp. 69-78. Reprinted as ERS-303.

Economic Research Service. 1966. A Chronology of American Agriculture. 1790-1965. A fold-out chart.

## Line Project Check List -- Reporting Year October 1, 1965 to September 30, 1966

Work & Line Project Number	Work and Line Project Titles	Work Locations During Past Year	Line Project Incl. in	
			Summary of Progress (Yes-No)	Area and Subheading
ESA 1	Current Outlook and Situation Analysis for Agricultural Commodities			
ESA 1-1	Livestock and meat	Washington, D. C. & Denver, Colo.	Yes	1-C
ESA 1-2	Fats, oils and oilseeds	Washington, D. C.	Yes	1-F
ESA 1-3	Milk and manufactured dairy products	Washington, D. C.	Yes	1-D
ESA 1-4	Poultry and eggs	Washington, D. C.	Yes	1-E
ESA 1-5	Food grains	Washington, D. C.	Yes	1-A
ESA 1-6	Feed grains and other feeds	Washington, D. C.	Yes	1-B
ESA 1-7	Fruits and tree nuts	Washington, D. C.	Yes	1-G
ESA 1-8	Vegetables	Washington, D. C.	Yes	1-H
ESA 1-10	Cotton and synthetic fibers	Washington, D. C.	Yes	1-I
ESA 1-11	Animal fibers	Washington, D. C.	Yes	1-J
ESA 1-12	Tobacco and tobacco products	Washington, D. C.	Yes	1-K
ESA 2	Price, Supply, and Utilization Analysis for Farm Products			
ESA 2-1	Development, consultation and service work	Washington, D. C.	Yes	2-H
ESA 2-6	Consumption of textile fibers	Washington, D. C.	Yes	2-F
ESA 2-7	Price and utilization of cotton	Washington, D. C.	Yes	2-F
ESA 2-9	Price and supply of livestock and consump- tion of meat	Washington, D. C.	Yes	2-B
ESA 2-10	Price supply and utilization of vegetables	Washington, D. C.	Yes	2-E
ESA 2-11	Price, supply and consumption of poultry and eggs	Washington, D. C.	Yes	2-C
ESA 2-12	Factors that affect the feed-livestock economy	Washington, D. C.	Yes	2-A, B
ESA 2-13	Supply, price and utilization of tobacco	Washington, D. C.	Yes	2-G

## Line Project Check List -- Reporting Period October 1, 1965 to September 30, 1966 (Cont'd)

Work & Line Project Number	Work and Line Project Titles	Work Locations During Past Year	Line Project Incl. in	
			Summary of Progress (Yes-No)	Area and Subheading
ESA 3	Measurement and analysis of farm income and expenditures	Washington, D.C.		
ESA 3-1	Current estimates of cash receipts, gross and net farm income, and related series	Washington, D.C.	Yes	3-A
ESA 4	Research and methods relating to farm income estimates	Washington, D.C.		
ESA 4-1	Income estimates analysis and development	Washington, D.C.	Yes	3-B-1,2,3
ESA 4-2	Quantitative relationships between agriculture and other sectors of the economy	Washington, D.C.	Yes	3-C
ESA 5	Statistical data services	Washington, D.C.		
ESA 5-1	Statistical services which includes the centralization, maintenance, and analysis of basic economic data relating to agriculture	Washington, D.C.	Yes	3-D
ESA 6	Income and demand analysis as applied to agriculture and the agricultural outlook	Washington, D.C.		
ESA 6-1	Agricultural situation and outlook analysis, including domestic and foreign demand, short-term and long-term improvements in data and techniques	Washington, D.C.	Yes	4-A
ESA 7	Long-run agricultural projections, analysis and research	Washington, D.C.		
ESA 7-1	Integrated long-run projections of supplies, utilization, prices and income for agriculture	Washington, D.C.	Yes	4-B
ESA 7-2	Analysis of the long-run implications of alternative farm programs	Washington, D.C.	Yes	4-B
ESA 7-3	Estimation and development of a long-run aggregate supply and demand structure for livestock, livestock products, feeds and other field crops	Washington, D.C.	Yes	4-B
ESA 8	Measurement and analysis of supplies and consumption of food and other agricultural products	Washington, D.C.		
ESA 8-1	Estimation and outlook analysis of food supplies, consumption, and prices	Washington, D.C.	Yes	4-C
ESA 8-2	Re-evaluation and improvement of indexes of supply-utilization of farm commodities	Washington, D.C.	Yes	4-C
ESA 8-3	Analysis of changes in the demand for food	Washington, D.C.	Yes	4-C
ESA 9	Agricultural history	Washington, D.C.		
ESA 9-1	Service work on the history of agriculture	Washington, D.C.	Yes	5-A
ESA 9-2	Documentation of Department policies, organization, and administration	Washington, D.C.	Yes	5-B
ESA 9-3	History of production adjustment plans and programs	Washington, D.C.	Yes	5-B





